

WHAT IS CLAIMED IS:

1. An indoor local area network (LAN) system comprising:
at least a first remote terminal comprising:
 - (i) an ultra wide-band (UWB) conversion module for converting input digital data into analog data in an ultra wide-bandwidth for transmission from said at least first remote terminal, and
 - (ii) an antenna connected with said UWB module for wirelessly transmitting the converted analog signal from the UWB module of the remote terminal in the ultra wide-bandwidth;
- 10 wherein said UWB module is adapted for receiving an analog signal in an ultra wide-bandwidth via the antenna and converting the received analog signal into a digital signal;
at least a first access point for performing USB-based wireless communication with said first remote terminal in a corresponding area, said access point receiving said analog signal of the ultra wide-bandwidth transmitted from said first remote terminal and converting the received analog signal into an optical signal; and
- 15 a central unit in communication with said first access point via an optical cable, said central unit receiving said optical signal converted by said access point, converting the received optical signal into a digital signal, determining a destination of the converted digital signal and transmitting the digital signal to the determined destination.
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2. The indoor LAN system as set forth in claim 1, wherein said access point includes:

a access point optical transmitter for receiving said analog signal of the ultra wide-bandwidth transmitted from said first remote terminal and for converting the received analog signal into an optical signal and transmitting the converted optical signal to said central unit via said optical cable; and

a access point optical receiver for receiving an optical signal transmitted from said central unit, converting the received optical signal into an analog electrical signal of the ultra wide-bandwidth and wirelessly transmitting the converted analog electrical signal to a remote terminal of said determined destination.

3. The indoor LAN system as set forth in claim 2, wherein said central unit includes:

a central unit optical transmitter/receiver module for receiving said optical signal from said first access point optical transmitter and converting the received optical signal into an electrical signal;

a central unit UWB module for receiving said electrical signal converted by said optical transmitter/receiver module and converting the received electrical signal into a digital signal; and

a routing module for determining a destination of said digital signal converted by said UWB module from said digital signal, setting up a transfer path of said digital signal based on the determined result and sending said digital signal to said UWB module with information regarding said transfer path contained therein.

4. The indoor LAN system as set forth in claim 3, wherein:

 said central unit UWB module is adapted to convert said digital signal containing said information regarding said transfer path set up by said routing module into an analog electrical signal of the ultra wide-bandwidth and send the converted analog electrical signal

5 to said central unit optical transmitter/receiver module; and

 said central unit optical transmitter/receiver module is adapted to convert said analog electrical signal converted by said UWB module into an optical signal and transmit the converted optical signal to said first access point for management of a network to which a destination remote terminal corresponding to said transfer path information belongs.

10 5. The indoor LAN system as set forth in claim 3, wherein said routing module is adapted to, upon determining from said digital signal converted by said central unit UWB module that said destination of said digital signal is not a terminal in a network managed by said access point connected with said central unit via said optical cable, transfer said digital signal containing said transfer path information to an outdoor network connected with said central unit, and manage communication of a destination remote terminal corresponding to said transfer path information.

15 6. A method for providing an indoor local area network (LAN) system comprising the steps of:

20 (a) providing at least a first remote terminal comprising:

 (i) an ultra wide-band (UWB) conversion module for converting input digital data into analog data in an ultra wide-bandwidth for transmission from said at least first remote terminal, and

(ii) an antenna connected with said UWB module for wirelessly transmitting the converted analog signal from the UWB module of the remote terminal in the ultra wide-bandwidth;

wherein said UWB module is adapted for receiving an analog signal in an ultra wide-bandwidth via the antenna and converting the received analog signal into a digital signal;

5 (b) performing USB-based wireless communication with said first remote terminal in a corresponding area by at least a first access point, said access point receiving said analog signal of the ultra wide-bandwidth transmitted from said first remote terminal and
10 converting the received analog signal into an optical signal; and

(c) providing a central unit in communication with said first access point via an optical cable, said central unit receiving said optical signal converted by said access point, converting the received optical signal into a digital signal, determining a destination of the converted digital signal and transmitting the digital signal to the determined destination.

15 7. The method as set forth in claim 6, further comprising:

(b) (i) providing an access point optical transmitter for receiving said analog signal of the ultra wide-bandwidth transmitted from said first remote terminal and for converting the received analog signal into an optical signal and transmitting the converted optical signal to said central unit via said optical cable; and

20 (b) (ii) providing an access point optical receiver for receiving an optical signal transmitted from said central unit, converting the received optical signal into an analog electrical signal of the ultra wide-bandwidth and wirelessly transmitting the converted analog electrical signal to a remote terminal of said determined destination.

8. The method as set forth in claim 7, wherein:

receiving said optical signal from said first access point optical transmitter and converting the received optical signal into an electrical signal by a central unit optical transmitter/receiver module;

5 receiving said electrical signal converted by said optical transmitter/receiver module and converting the received electrical signal into a digital signal by a central unit UWB module; and

10 determining a destination of said digital signal converted by said UWB module from said digital signal, setting up a transfer path of said digital signal based on the determined result and sending said digital signal to said UWB module with information regarding said transfer path contained therein by a routing module.

9. The method as set forth in claim 8, wherein:

15 adapting said central unit UWB module to convert said digital signal containing said information regarding said transfer path set up by said routing module into an analog electrical signal of the ultra wide-bandwidth and send the converted analog electrical signal to said central unit optical transmitter/receiver module; and

20 adapting said central unit optical transmitter/receiver module to convert said analog electrical signal converted by said UWB module into an optical signal and transmit the converted optical signal to said first access point for management of a network to which a destination remote terminal corresponding to said transfer path information belongs.

10. The method as set forth in claim 8, wherein said routing module determines

from said digital signal converted by said central unit UWB module that said destination of said digital signal is not a terminal in a network managed by said access point connected with said central unit via said optical cable, transfer said digital signal containing said transfer path information to an outdoor network connected with said central unit, and

5 manage communication of a destination remote terminal corresponding to said transfer path information

11. An indoor LAN system comprising:

a first area, a second area, and a third area of sub-networks having respective

10 management ranges of nodes therein;

a first access point, a second access point, and a third access point, each of the first, second and third access points associated with a respective area;

a central unit that is in communication with the first, second and third areas and with an external network;

15 wherein each of the sub-networks and respective nodes communicate via Ultra Wide Band (UWB) communication; and

wherein each of the sub-networks and the central unit and the central unit communicate via optical fiber; and

20 wherein each of the access points includes a optical transmitter/receiver module for converting optical communication from one of the first, second and third areas or said central unit and converting said communication into an analog UWB signal to communicate with at least one of the respective nodes.

12. The system according to claim 11, wherein the central unit and the external network communicate via a Fiber To The Home (FTTH) system.